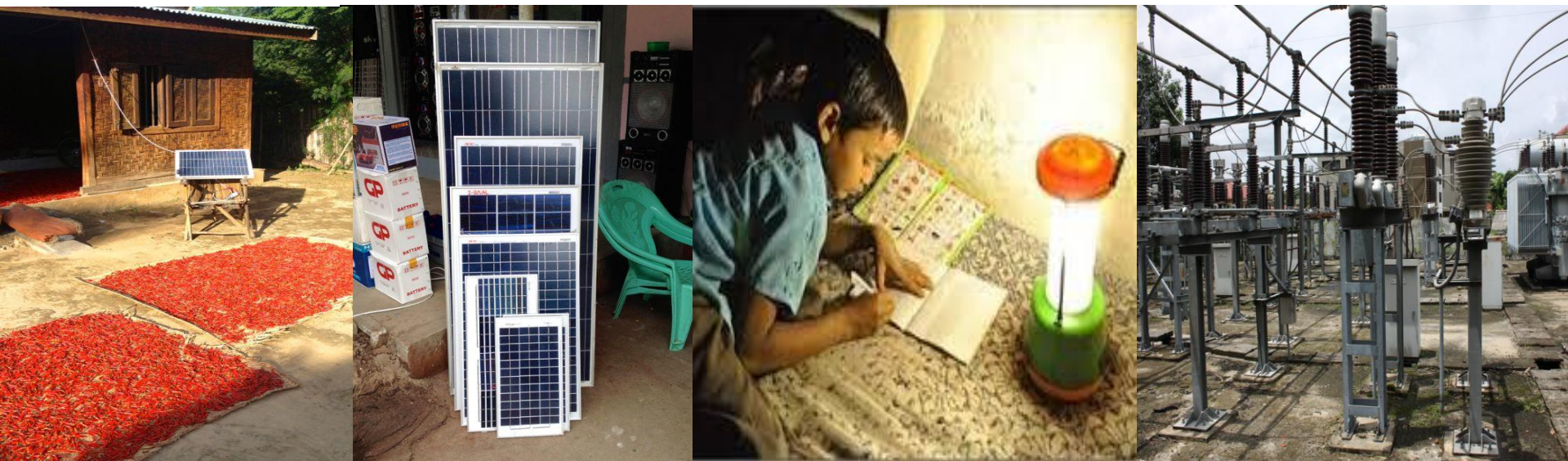


# ADB's Energy Program in Myanmar



**March 2014**

**Chong Chi Nai**

**Director, Energy Division**

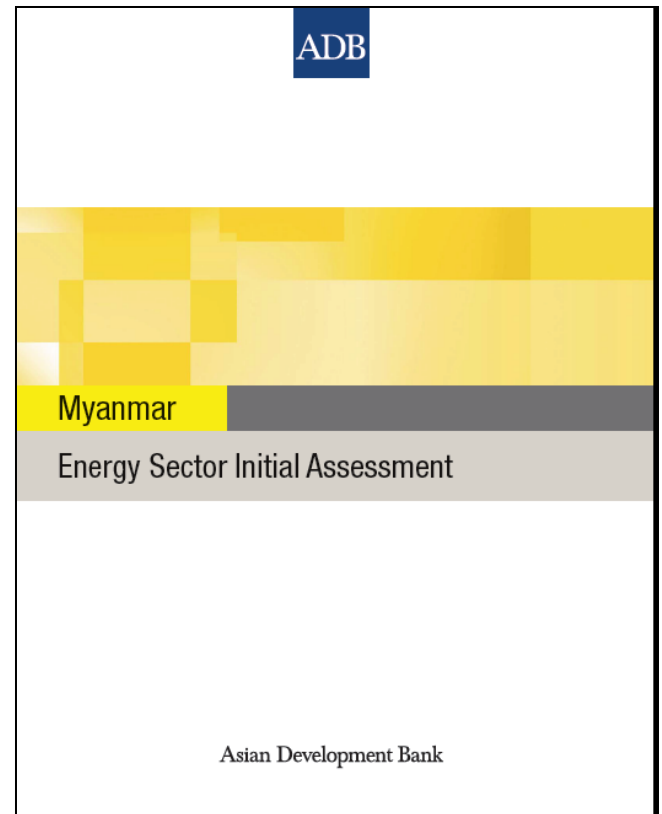
**Southeast Asia Regional Department**

# Current Sector Context

- ❑ Low electrification ratio
  - Need to develop cost effective way to extend electricity supply to about 6.4 million unconnected households
- ❑ Electricity shortage in dry season
  - Yangon required load shedding of 200 MW in summer 2013, peak demand is growing at 15% annually and there is insufficient gas for power generation
- ❑ High technical and non-technical losses in transmission and distribution
  - 27% in 2011
- ❑ Grid extension to rural areas will be expensive and could be delayed
  - Population of about 60 million with more than 70% in rural areas
  - Need to explore off-grid applications on a large scale

# ADB's Involvement in the Energy Sector

- ❑ First-ever Sector Assessment Completed – 2012
- ❑ New Energy Architecture Report: In collaboration with Accenture – 2013 (released at the World Economic Forum, Nay Pyi Taw)
- ❑ Facilitated drafting of the Electricity Law – 2013
- ❑ First Investment Program Approved – 2013
- ❑ Additional Investment Programs are being developed
- ❑ Ongoing technical assistance programs focussed on power sector reform, capacity development and off-grid renewable energy applications



# **ADB's Assistance**

- ✓ **Technical Assistance on Sector-wide Issues**
- ✓ **On-grid Investment Programs**
- ✓ **Off-grid Renewable Energy Program**

# Technical Assistance on Sector-wide Issues

## ❑ **Capacity Development and Institutional Support (TA8244)**

- Power Sector Advisor to the Ministry of Electric Power (mobilized in end-March 2014)

## ❑ **TA for Enhancing the Power Sector's Legal and Regulatory Framework (TA 8469)** - \$850,000 from Norway

- Upgrading the Myanmar Electricity Law (1984) and the Electricity Rules (1985)

## ❑ **Institutional Strengthening of National Energy Management Committee in Energy Policy and Planning (TA 8356)** - \$1.35

million from Japan Fund for Poverty Reduction (JFPR)

- Long-term Energy Master Plan
- Energy Efficiency Policy, Renewable Energy Development Strategy

# On-grid Investment Programs

## 2013

- ❑ **Power Distribution Improvement Project (\$60 million)**
  - Five townships in Yangon region [Hlaingthaya, Insein, Kamayut, Mayangone, and Mingaladon]; four districts in Mandalay region [Kyaukse, Meikhtila, Myingyen, and Yameethin]; five districts in Sagaing region [Kalay, Katha, Monywa, Sagaing, and Shwebo]; and two townships in Magway region [Aungland and Magway]
  - Loan agreement was signed on 28 January 2014
  - Advanced action was undertaken for the recruitment of project implementation consultants and procurement of goods.

## 2014

- ❑ **Power Transmission Improvement Project (\$80 million)**
  - Rehabilitation and expansion of 230kV transmission lines and associated substations

## 2015

- ❑ **Power Transmission and Distribution II (\$75 million) - TBD**

# ADB Off-grid Renewable Energy Program



## **Phase 1: (October 2013 – August 2014)**

- Pilot Regions: Mandalay and Chin State
- Outputs
  - a. Implement off-grid energy solutions for community infrastructure in 20 off-grid villages.
  - b. Least cost electrification plan for Mandalay region.
  - c. International Investor forum in Nay Pyi Taw in March 2014.

## **Phase 2: USD 2 million Grant ( May 2014 – May 2017) – Financed by Govt of Japan (JFPR)**

- Coverage: Dry Zone, Chin State, Kayah State and Rakhine State
- Outputs
  - a. Implement off-grid energy solutions for public and community infrastructure in 50 off-grid villages.
  - b. Least cost electrification plan, and related policy and regulatory support

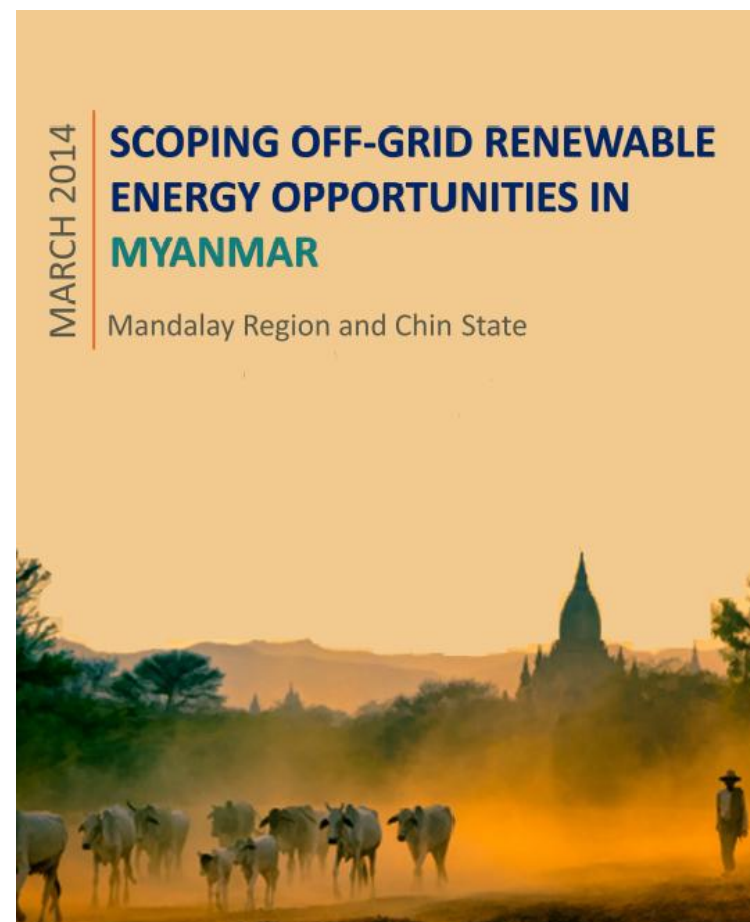
## **Phase 3: Off-grid Renewable Energy Investment Program (tentative – Q3/2015)**

- Combine loan and grant funds (link with SREP and other energy access programs)



# Guiding Principles for Phase 1

1. Responsive to government's request for immediate deployment of RE based solutions
2. Adopt sustainable delivery approach
  - a. >5km from Grid
  - b. Capitalize on existing RE resources
  - c. Scaled up in phase 2 & 3
  - d. Promote private sector participation
  - e. Bring ADB experience in service delivery models.
  - f. Leverage ADB's Energy for all Program
3. Stock taking in off-grid villages: energy poverty, affordability and willingness to pay, links to government plans, community participation and technology suppliers.



**Report can be downloaded off  
ADB Energy for All Website**



# Challenges and Opportunities



## 1. Opportunities

- a. Government commitment and government reach at village level
- b. Recent programs by MOI, DRD, MOAI, MOEP and others. Current program by MLFDRD and regional governments.
- c. Community based organizations in place
- d. Community interest and willingness to accept change
- e. SHSs are in use in several villages and help to provide a demonstration effect

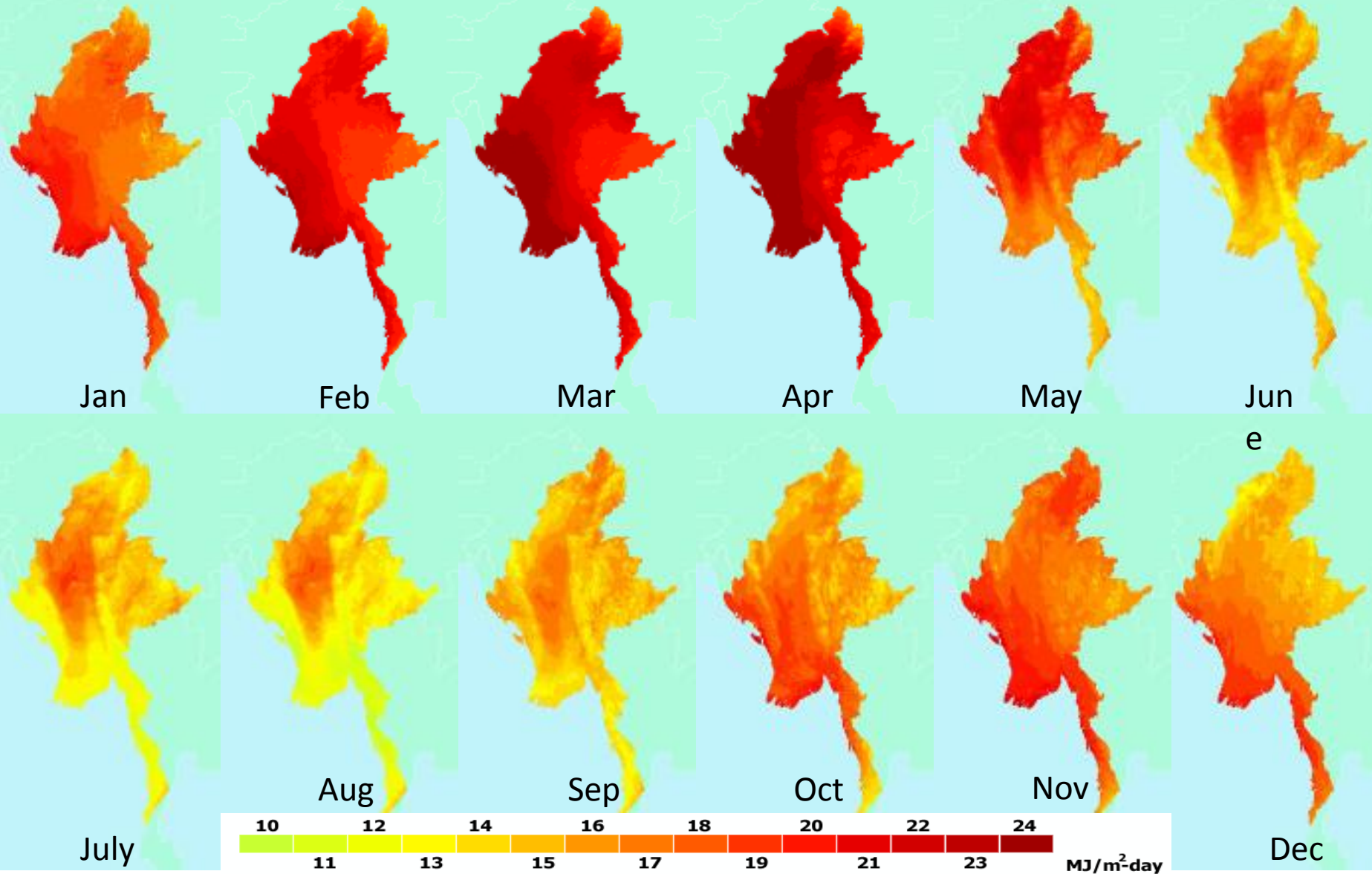
## 2. Challenges

- a. Low loads and very low affordability to pay
- b. Difficult terrain
- c. Lack of access to financing
- d. Lack of technology awareness among rural communities
- e. Lack of reach of private RE suppliers at village level and after sales support mechanism
- f. Need a road map for rural electrification including clear targets, enabling policies, incentives, models, and concessional funds.

# Findings: Affordability and Willingness to Pay

Source of Electricity and Energy for Lighting	Range of Monthly Spending (Kyat)		Percent of Households	Wealth Classification
	Low	High		
Solar PV Home System	n/a	n/a	11%	Very High
Diesel mini grid	2,700	5,400	14%	High
LED light powered by dry cell batteries and some candlelight	2,750	3,450	37%	Medium
Car battery power T4 size fluorescent tube or CFL or LED light	2,200	4,000	5%	Medium
Candle and LED light powered by dry cell batteries or small battery	3,750	4,375	7%	Medium
Candle & wick lamp	1,000	6,000*	15%	Low
Candle	2,000	7,000*	10%	Very Low
Solar lantern	n/a	n/a	0.30%	n/a

# Monthly Solar Radiation in Myanmar



# Proposed Pilot Interventions in Mandalay and Chin



1. Solar Home Solutions (SHS) for lighting and TV applications (30 Wp DC, 70 Wp DC and 110 Wp AC) using output-based aid (OBA) – 1000 Units
2. Solar Mini Grids (8-12 kW) – 2 villages
3. Solar Lantern Charging Stations and Selling points – 3 villages
4. Total Project Cost: \$321,000 (ADB- \$135,900 and Government - \$11,350). Remainder to come from consumers.



Thank you for  
your attention!

For further inquiries  
[cnchong@adb.org](mailto:cnchong@adb.org)